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_____ *Invasive Plants*

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2008/001 First report of *Tuta absoluta* in Spain

In Spain, the presence of *Tuta absoluta* (Lepidoptera: Gelechiidae – EPPO A1 List) was noted for the first time at the end of 2006 on tomato crops in the province of Castellón (Comunidad Valenciana). In 2007, *T. absoluta* was detected in several places along the Mediterranean coast in the province of Valencia (Comunidad Valenciana) where it caused severe damage. Up to 100% losses have been observed in tomato crops planted during winter in the province of Valencia. The pest was also detected on the island of Ibiza (Baleares). The severity of damage to tomato crops and the pest's potential for further spread are raising serious concern among tomato growers in Spain.
The situation of *Tuta absoluta* in Spain can be described as follows: **Present, first recorded in 2006, damaging tomato crops in Comunidad Valenciana (Castellón, Valencia) and Islas Baleares (Ibiza).**

Note: *T. absoluta* is a pest of South American origin which is recorded in: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela. Until this first record in Spain, it was absent from the EPPO region. Its main host plant is tomato (*Lycopersicon esculentum)* but it can also attack aubergine *(Solanum melongena),* potato *(S. tuberosum),* pepino *(S. muricatum*) and solanaceous weeds *(Datura stramonium, Lycium chilense* and *S. nigrum*).

Source: Urbaneja A, Vercher R, Navarro V, García Marí F, Porcuna JL (2007) La polilla del tomate, *Tuta absoluta*. *Phytoma-España* no. 194, 16-23.

INTERNET (last retrieved in 2008-01)
Butlletí Oficial de les Illes Balears. 6 d'octubre de 2007 Fascicle I de 2 Núm. 150. http://boib.caib.es/pdf/2007150/mp1.pdf
FreshPlaza: Noticias del sector de frutas y verduras.
España: alertan que la campaña de tomate valenciano peligra por la plaga *Tuta absoluta*. http://www.freshplaza.es/news_detail.asp?id=2288
España: Agricultura establece las medidas para combatir en 2008 la plaga de la polilla del tomate en la Comunitat Valenciana.
http://www.freshplaza.es/news_detail.asp?id=2735
Gobierno del principado de Asturias
http://www.asturias.es/Asturias/descargas/Documentos%20de%20Sanidad%20Vegetal/Tuta_absoluta.pdf
Diario de Ibiza
El Consell Insular inicia un tratamiento de choque contra la plaga del tomate.
http://www.diariodeibiza.es/secciones/noticia.jsp?pRef=3162_2_184017__Local-Consell-Insular-inicia-tratamiento-choque-contra-plaga-tomate
Detectado un foco de una plaga que afecta a las tomateras en una finca en Son Ferriol. http://www.diariodemallorca.es/secciones/noticia.jsp?pRef=1639_2_289082__Mallorca-Detectado-foco-plaga-afecta-tomateras-finca-Ferriol

Additional key words: new record **Computer codes:** GNORAB, ES

2008/002 *Anoplophora chinensis* found in the Netherlands

In December 2007, during specific surveys targeted at companies importing trees and bonsais from Asia, *Anoplophora chinensis* (Coleoptera: Cerambycidae – EPPO A2 List) was detected for the second time in the Netherlands. It can be recalled that a single male adult of *A. chinensis* had been found on *Acer japonicum* in a private garden in 2003, but in the absence of any further occurrence, the outbreak was considered eradicated in 2006 (see EPPO RS 2006/099).

The new findings were made at 4 different locations: 1 public garden and 3 companies importing trees and bonsais from Asia. In the public garden, *A. chinensis* was found on 2 *Acer* trees in the western part of the Netherlands which is a densely populated region with very limited forests. On one of the trees (*Acer platanoides* or *A. pseudoplatanus*), at least 17 larvae and 8 exit holes were observed which suggested that the outbreak had been present since at least 2002. This public garden was located in the vicinity of a company which had been importing *Acer palmatum* trees from China, since at least 2000. At this company, several *Acer* trees with exit holes were observed. Surveys also revealed that *A. chinensis* occurred at 2 companies located in other parts of the Netherlands and these findings could be directly linked to imports (multiple imports from China and one import from Japan). Delimiting surveys in areas surrounding these companies did not result in any further findings.
Eradication measures are being implemented and will be completed by the end of April 2008 (before the emergence and dispersal of adults). In the public garden, the 2 infested trees will be removed and destroyed, as well as all *Acer* plants within a radius of 200-300 m and all other potential host plants within a radius of 100 m. At infested companies, all *Acer* trees belonging to the same consignments as the infested plants will be destroyed.
The pest status of *Anoplophora chinensis* in the Netherlands is officially declared as: **Transient, only detected on *Acer* spp., under eradication.**

Source: NPPO of the Netherlands, 2008-01.

INTERNET (last retrieved in 2008-01)
Website of the Dutch Ministry of Agriculture, Nature and Food Quality. Pest report. *Anoplophora chinensis* on *Acer* spp. in public green and companies.
http://www.minlnv.nl/portal/page?_pageid=116,1640321&_dad=portal&_schema=PORTAL&p_file_id=24663

Additional key words: new record **Computer codes:** ANOLCN, NL

2008/003 Incursion of *Aculops fuchsiae* in Germany

The NPPO of Germany recently informed the EPPO Secretariat of an incursion of *Aculops fuchsiae* (Acari: Eriophyidae - EPPO A2 List) in the private garden of a fuchsia amateur at Kassel (Hessen). The owner of the infested fuchsias had introduced them in 2005 as cuttings from the USA in his luggage and without any phytosanitary control. However, the symptoms caused by *A. fuchsiae* could be recognized and this finding was published on the website of an association of garden plant amateurs (DDFGG). Phytosanitary measures have been taken to eradicate the pest.
The pest status of *Aculops fuchsiae* in Germany is officially declared as: **One single case, under eradication.**

Source: NPPO of Germany, 2008-01.

DDFGG website (last retrieved in 2008-01).
Deutsche Dahlien-, Fuchsien- und Gladiolen-Gesellschaft. Die Fuchsiengallmilbe hat Deutschland erreicht !
http://www.ddfgg.de/Allgemein/aktuell/Archiv/index_Fuchsiengallmilbe_2.html

Additional key words: phytosanitary incident **Computer codes:** ACUPFU, DE

2008/004 First report of *Raoiella indica* in Florida (US)

In the USA, *Raoiella indica* (Acari: Tenuipalpidae – EPPO Alert List) was detected for the first time in Palm Beach county, Florida, in December 2007. It was found on a coconut palm tree (*Cocos nucifera*) at a medical facility in Palm Beach Gardens. This is the first confirmed report of this palm pest in the USA. It is noted that in 2007, *R. indica* has also been detected in the US Virgin Islands (see EPPO RS 2007/187), Grenada, Haiti, Jamaica and Venezuela (all new country records).
The pest status of *Raoiella indica* in the USA is officially declared as follows: **Transient, actionable, and under surveillance.**

Source: Florida Department of Agriculture and Consumer Services (US). Press Release of 2007-12-05. Red palm mite infestation identified in palm gardens.
http://www.doacs.state.fl.us/press/2007/12052007_2.html

NAPPO Phytosanitary Alert System – Official Pest Reports (2007-12-14) Detections of Red Palm Mite (*Raoiella indica*) in Palm Beach County, Florida - United States.
http://www.pestalert.org/oprDetail.cfm?oprID=302

Additional key words: new record **Computer codes:** RAOIIN, GD, HT, JM, US, VE

2008/005 *Clavibacter michiganensis* subsp. *michiganensis* found in the Netherlands

In December 2007, the presence of *Clavibacter michiganensis* subsp. *michiganensis* (EPPO A2 List) was suspected on tomatoes (*Lycopersicon esculentum* cv. Bizarr) grown at 1 propagation company and 4 fruit producing companies in the Netherlands. The identity of the pathogen was then confirmed by using the EPPO diagnostic protocol with an improved purification method. This outbreak is not linked to the previous one reported in April 2007 (see EPPO RS 2007/090). The possible source of infection is still being investigated, but is most likely related to contaminated seeds of the cultivar 'Bizarr' which have been produced in Bolivia. As the outbreak was detected at an early stage, phytosanitary measures were taken immediately to eradicate the disease.
The pest status of *Clavibacter michiganensis* subsp. *michiganensis* in the Netherlands is officially declared as: **Transient, under eradication.**

Source: NPPO of the Netherlands, 2008-01.

INTERNET (last retrieved in 2008-01)
Website of the Dutch Ministry of Agriculture, Nature and Food Quality. Pest report. *Clavibacter michiganensis* subsp. *michiganensis* in tomato plants intended for planting.
http://www.minlnv.nl/portal/page?_pageid=116,1640321&_dad=portal&_schema=PORTAL&p_file_id=24804

Additional key words: detailed record **Computer codes:** CORBMI, NL

2008/006 First report of *Tomato chlorotic dwarf viroid* on *Petunia* in the United Kingdom

Following the recent findings of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List) in ornamental Solanaceae in Europe, emergency measures were adopted by the European Union (Commission Decision 2007/410/EC*), and EU member states were required to carry out surveys on PSTVd. As part of this survey, 166 samples (asymptomatic) of *Petunia* were collected from 5 nurseries in Scotland (GB) in 2007. The first screening tests used a general PSTVd probe which also hybridises to other pospiviroid. As a result 13 *Petunia* varieties tested positive for the presence of a pospiviroid. Further analysis (PCR, sequencing) confirmed the presence of *Tomato chlorotic dwarf viroid* (*Pospiviroid*, TCDVd). This was the first time that TCDVd has been detected in the United Kingdom. All infected lots of *Petunia* were destroyed. Interestingly, in November 2005, 13 accessions of *Petunia* hybrids from the USA entered the post-entry quarantine station of the Dutch Plant Protection Service. The plants were inspected and tested for quarantine pests. No virus or viroid symptoms were observed but when tested for pospiviroids, the presence of TCDVd was found. This was the first time that TCDVd has been detected on *Petunia* plants originating from the USA.

Note: TCDVd was first observed in Canada in glasshouse tomatoes (*Lycopersicon esculentum* cv. 'Trust') in Manitoba in 1996. Affected plants showed symptoms resembling those of PSTVd (stunting, distortion, leaf chlorosis). Infected tomato plants had been grown from seeds imported from the Netherlands via the USA. TCDVd was successfully eradicated and not reported since then in Canada. However, TCDVd was recently found in the USA, in 2 tomato glasshouses in Arizona.

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* Commission Decision (2007/410/EC) of 12 June 2007 on measures to prevent the introduction into and the spread within the Community of *Potato spindle tuber viroid. Official Journal of the European Union* L 155, 71-73. http://www.eppo.org/ABOUT_EPPO/EPPO_MEMBERS/phytoreg/eu_texts/2007-410-EC-e.pdf

Source: James T, Mulholland V, Jeffries C, Chard J (2007) First report of *Tomato chlorotic dwarf viroid* infecting commercial Petunia stocks in the United Kingdom. *New Disease Reports* Volume 15 (February – July).
http://www.bspp.org.uk/ndr/july2007/2007-48.asp
Singh RP, Xianzhou N, Singh M (1999) *Tomato chlorotic dwarf viroid*: an evolutionary link in the origin of pospiviroids. *Journal of General Virology* **80**(11), 2823-2828 (abst.).
Verhoeven JTJ, Jansen CCC, Werkman AW, Roenhorst JW (2007) First report of *Tomato chlorotic dwarf viroid* in *Petunia hybrida* from the United States of America. *Plant Disease* **91**(3), p 324.

INTERNET (last retrieved in 2008-01)
Website of the Ministry of Agriculture and Lands, British Columbia, Canada. *Tomato chlorotic dwarf viroid* (TCDVd): An overview.
http://www.agf.gov.bc.ca/cropprot/tcdvd.htm

Additional key words: new record **Computer codes:** TCDVD0,GB

2008/007 First report of *Columnea latent viroid* on tomatoes in the United Kingdom

In England (GB), 4 outbreaks of *Columnea latent viroid* (*Pospiviroid*, CLVd) were confirmed in nurseries producing tomatoes (*Lycopersicon esculentum*) in December 2007. Phytosanitary measures are being implemented to contain the outbreaks and eradicate the disease. This was the first time that CLVd has been reported in the United Kindgom.

CLVd was originally isolated from symptomless *Columnea erythrophaea* (Gesneriaceae, originating from Central America and cultivated for ornamental purposes), during experiments carried out in a commercial nursery in Maryland (US). In later experiments, CLVd could be detected in *Columnea* cultivars obtained from European nurseries (no further details provided) but not from *Columnea* specimens collected from Costa Rica. So far, the origin of CLVd remains unknown. CLVd was also detected in other symptomless ornamentals: *Brunfelsia undulata* (Solanaceae) and *Nematanthus wettsteini* (Gesneriaceae). CLVd can naturally infect tomato and causes severe symptoms resembling those of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List): stunting, leaf distortion and chlorosis. In the United Kingdom, leaf reddening ('bronzing') and necrosis were also prominent symptoms. Potato (*Solanum tuberosum*) is a potential host of CLVd. During experiments, the viroid could be mechanically transmitted to potato plants and symptoms resembling those of PSTVd could be observed. Long distance spread of CLVd is most likely to occur via infected plants or possibly by infected seed, although seed transmission has not yet been proven. CLVd can be transmitted from plant to plant by mechanical contact (direct plant-to-plant contact, infected tools and machinery, workers etc.).

Source: NPPO of United Kingdom, 2007-08.
Hammon RW (2003) *Columnea latent viroid*. In: Viroids (eds Hadidi A, Flores R, Randles JW, Semancik JS) CSIRO Publishing, Collingwood (AU), pp 231-232.

INTERNET (last retrieved in 2008-01)
DEFRA website.
Plant Health. Update: First UK findings of *Columnea latent viroid* on tomato production nurseries. http://www.defra.gov.uk/planth/newsitems/clvd.htm
APS website
APSnet Feature Story by Hammon RW, Owens RA (2006) Viroids: new and continuing risks for horticultural and agricultural crops.
http://www.apsnet.org/online/feature/viroids/

Additional key words: new record **Computer codes:** CLVD00,GB

2008/008 *Potato spindle tuber viroid* detected on ornamental Solanaceae in Italy

In Italy, a limited survey on the occurrence of *Potato spindle tuber viroid* (Pospiviroid, PSTVd – EPPO A2 List) in ornamental Solanaceae was conducted at the beginning of 2007. A total of 23 symptomless *Solanum jasminoides* plants were collected at random from 4 nurseries in Central and Southern Italy. Molecular tests were performed (RT-PCR, dot-blot hybridization, sequencing) and revealed the presence of PSTVd in 17 samples of *S. jasminoides*. The study was extended to 2 plants of *S. rantonnetii* growing in one of the nurseries surveyed and 1 plant tested positive. This was the first record of a natural infection of PSTVd in *S. rantonnetii*. As these preliminary studies stressed the need for simple, fast and economic diagnostic methods, a tissue-printing hybridization method was developed. To validate it, 94 samples of *S. jasminoides* and 106 samples of *S. rantonnetii*

were collected from 3 glasshouses in Apulia. The incidence of PSTVd was 100 % in *S. jasminoides* and 26.4% in *S. rantonnetii* (all plants were symptomless). Identical results were obtained when the same samples were tested by dot-blot hybridization and RT-PCR. The identity of the pathogen was also confirmed by sequencing PCR-products obtained from 5 samples. Although further studies have to be done, in particular on the specificity of the method, tissue-printing hybridization could be a useful tool for the routine detection of PSTVd in ornamental Solanaceae. Although limited to a small number of plants and localities, these preliminary studies have revealed a very high percentage of infected plants which underlines the need for large scale surveys in Italy and other European countries on the occurrence of PSTVd in ornamental plants, and the need to produce propagation material free of PSTVd.

Source: Di Serio F (2007) Identification and characterization of *Potato spindle tuber viroid* infecting *Solanum jasminoides* and *S. rantonnetii* in Italy. *Journal of Plant Pathology* **89**(2), 297-300.

Di Serio F, Silletti MR, Trisciuzzi VN, Guario A, Percoco A, Lillo AR (2007) [*Potato spindle tuber viroid* in ornamental Solanaceae and its detection by tissue printing hybridization assay.] *Informatore Fitopatologico* no. 12, 82-85 (in Italian).

Additional key words: new record **Computer codes:** PSTVD0, IT

2008/009 Incursion of *Potato spindle tuber viroid* on ornamental Solanaceae in Austria

The Austrian Plant Protection Service recently informed the EPPO Secretariat of the first detection of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List) in Austria. During an official monitoring survey, PSTVd was detected in Tyrol on *Solanum jasminoides* and *Brugmansia* spp. (Solanaceae), at 2 companies producing plants for final consumers. Eradication measures were imposed (all plants of these species were destroyed and the premises disinfected). Sales of *Brugmansia* spp., *Solanum jasminoides* and *Solanum rantonnetii* by the two enterprises concerned were suspended. No other occurrence of PSTVd was found. Investigations showed that the infested plants originated from Italy. The Italian Plant Protection Service was informed.
The pest status of *Potato spindle tuber viroid* in Austria is officially declared as follows: **Occurrence on imported plants, eradicated.**

Source: NPPO of Austria, 2008-02.

Additional key words: phytosanitary incident **Computer codes:** PSTVD0, AT

2008/010 New host plant records for pospiviroids

Following the recent findings of *Potato spindle tuber viroid* (*Pospiviroid*, PSTVd – EPPO A2 List) in ornamental Solanaceae in Europe (e.g. *Solanum jasminoides* and *Brugmansia*– see EPPO RS 2006/142, 2006/159, 2006/229, 2007/024, 2007/149), surveys have been initiated in the Netherlands in 2006 to better understand the host status of ornamental plants. Many plant samples have been collected and tested (RT-PCR, sequencing). Although none of the ornamental host plants showed any symptoms, several samples tested positive for the presence of pospiviroids. In all cases, eradication measures have been applied (destruction of infested lots). The following viroids were identified:

- *Citrus exocortis viroid* (CEVd) in *Verbena* sp. (Verbenaceae). It is noted that CEVd had also been recently reported on *Verbena* in India and the USA.
- *Potato spindle tuber viroid* (PSTVd – EPPO A2 List) in *Brugmansia suaveolens, Streptosolen jamesonii,* and *Solanum jasminoides* (all Solanaceae).
- *Tomato apical stunt viroid* (TASVd – EPPO Alert List) in *Cestrum* sp. (Solanaceae).

Source:

Singh RP, Dilworth AD, Baranwal VK, Gupta KN (2006) Detection of *Citrus exocortis viroid, Iresine viroid,* and *Tomato chlorotic dwarf viroid* in new ornamental host plants in India. Plant Disease **90**(11), p 1457.

Verhoeven JTJ, Jansen CCC, Roenhorst JW (2007) First report of pospiviroids infecting ornamentals in the Netherlands: *Citrus exocortis viroid* in *Verbena* sp., *Potato spindle tuber viroid* in *Burgmansia suaveloens* and *Solanum jasminoides,* and *Tomato apical stunt viroid* in *Cestrum* sp. *New Disease Reports* Volume 15 (February – July). http://www.bspp.org.uk/ndr/july2007/2007-13.asp

Verhoeven JTJ, Jansen CCC, Roenhorst JW (2007) *Streptosolen jamesonii* 'Yellow', a new host plant *of Potato spindle tuber viroid*. *New Disease Reports* Volume 15 (February – July). http://www.bspp.org.uk/ndr/july2007/2007-46.asp

Additional key words: new host plants **Computer codes:** CEVD00, PSTVD0, TASVD0, NL

2008/011 *Leucinodes orbonalis* is regularly intercepted in the EPPO region: addition to the EPPO Alert List

From 2004 to 2007*, approximately 120 interceptions of *Solanum* fruits infested by *Leucinodes orbonalis* (Lepidoptera: Pyralidae) and imported from Asia and Africa have been made by several EPPO member countries (Czech Republic, France, Germany, Italy, Netherlands, United Kingdom). *L. orbonalis* was detected in 22 imported consignments in 2004, 35 in 2005, 47 in 2006 and 17 in 2007. The pest was mainly detected on fruits of aubergine (*Solanum melongena*). It was found to a lesser extent on *S. torvum, S. aethiopicum*, and occasionally on *S. gilo* and *S. aculeatissimum*. Most consignments originated from Thailand (94 consignments) and Ghana (18). *L. orbonalis* was also detected on fruits from India (6), Vietnam (2) and Kenya (1). Considering the large number and the frequency of these interceptions, the Panel on Phytosanitary Measures recommended that this pest should be included in the EPPO Alert List.

***Note**: The dataset is not yet complete for 2007, the EPPO Secretariat is still receiving data for that year.

Leucinodes orbonalis (Lepidoptera: Pyralidae) – eggplant fruit borer

Why	Since 2004, more than 120 interceptions of *Solanum* fruits infested by *Leucinodes orbonalis* and imported from Asia and Africa have been made by several EPPO member countries. The Panel on Phytosanitary Measures recommended that this pest should be included into the EPPO Alert List.
Where	*L. orbonalis* is a tropical pest which occurs in Asia and Africa. **EPPO region**: absent. **Asia:** Bangladesh, Brunei Darussalam, Cambodia, China, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Saudi Arabia, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam. **Africa:** Burundi, Cameroon, Congo, Ethiopia, Ghana, Kenya, Lesotho, Malawi, Mozambique, Nigeria, Rwanda, Sao Tome & Principe, Sierra Leone, Somalia, South Africa, Tanzania, Uganda, Zambia, Zimbabwe.
On which plants	Its major host is aubergine (*Solanum melongena*) but *L. orbonalis* can attack other solanaceous plants such as *S. tuberosu*m (potato), *S. aculeatissimum, S. indicum, S. myriacanthum, S. torvum, Lycopersicon esculentum* (tomato), *Capsicum annuum* or weeds (*S. nigrum*). The pest has also been reported on the following crops: *Beta vulgaris, Ipomoea batatas, Mangifera indica, Pisum sativum*.
Damage	Damage is caused by larvae which feed on fruits. Eggs are laid on leaves and young shoots. Hatching larvae crawl to the nearest shoots or fruits and bore inside. On fruit, larvae usually enter just below the calyx. 6 larval instars have been observed. Last instar larvae bore exit holes and pupate in plant debris on the soil surface, usually near the stem of the host plant. Adults are white with brown wing patterns (wingspan of 18 to 24 mm) and active at night. Pictures can be viewed on the Internet: http://www.ento.csiro.au/gallery/moths/slideshow.php?set_albumName=Leucinodesorbonalis http://www.avrdc.org/LC/eggplant/rear_efsb/03intro.html
Dissemination	Adults can fly over short distances, they are considered as weak flyers but no further details are given. Over longer distances, infested fruits can disseminate the pest.
Pathway	Plants for planting, fruits of *Solanum* and other host plants from countries where *L. orbonalis* occurs, soil?
Possible risks	Aubergines (*S. melongena*) and other hosts such as tomato (*Lycopersicon esculentum*), potato (*S. tuberosum*), and *Capsicum annuum* are widely grown in the EPPO region. In countries where *L. orbonalis* occurs, significant yield losses have been reported (e.g. in Asia more than 65% yield losses are reported on aubergine). Chemical control is the main method used (several active substances can be applied) but there is some indication that the pest has developed resistance. The presence of the insect may be easily overlooked during inspection, as holes can be very small. Considering the tropical nature of the pest, it is unlikely that the pest will survive outdoors in the northern part of the EPPO region but it probably could survive under protected conditions. More studies are needed to evaluate its establishment potential in the Southern part of the EPPO region which appears to be more at risk. Finally, *L. orbonalis* has been intercepted many times on fruit consignments, but the risk of transfer from infested fruits to crops is probably rather low.
Source(s)	Bishop S, Matthews L, MacLeod A (2006) CSL Pest Risk Analysis. York, UK. http://www.defra.gov.uk/planth/pra/LeucinodesOrbonalis.pdf CABI (2007) Crop Protection Compendium. Datasheet on *Leucinodes orbonalis*. http://www.cabicompendium.org/cpc/home.asp Van der Gaag DJ, Stigter H (2005) Pest Risk Analysis *Leucinodes orbonalis* (Guénée). Plant Protection Service, the Netherlands. http://www.minlnv.nl/cdlpub/servlet/CDLServlet?p_file_id=14186 Zhang B-C (1994) Index of the economically important Lepidoptera. CABI Wallingford, UK, 468 pp.

EPPO RS 2008/011
Panel review date - Entry date 2008-01

2008/012 Corn stunt: addition of *Spiroplasma kunkelii* to the EPPO Alert List

Corn stunt was first described from the Rio Grande Valley of Texas (US) in 1945. The disease is now considered as a major limiting factor in the production of maize in Central America and parts of South America. It has periodically invaded maize fields in parts of the Southern USA, and disease incidence has increased during the last decade, in particular in California. The disease is mainly transmitted by *Dalbulus maidis* (Homoptera: Cicadellidae) and may correspond to a complex of different pathogens. The three major components of corn stunt are *Spiroplasma kunkelii*, maize bushy stunt phytoplasma and *Maize rayado fino virus* (*Marafivirus*). *S. kunkelii* is considered to be the most important of the three pathogens because it is more often detected and causes high levels of damage to maize crops throughout Latin America. Highest infection levels have been observed in Central America, Argentina and Peru. Considering the damage recently reported from Argentina, the Panel on Phytosanitary Measures suggested that *S. kunkelii* could be added to the EPPO Alert List.

Spiroplasma kunkelii (corn stunt spiroplasma)

Why	Corn stunt is considered a major disease of maize (*Zea mays*) in the Americas. Although it is probably caused by a complex of pathogens, *Spiroplasma kunkelii* seems to be the major component of this disease. *S. kunkelii* is transmitted by leafhoppers in the field (mainly by *Dalbulus maidis*, Homoptera: Cicadellidae). As the importance of corn stunt is increasing in several American countries, the EPPO Panel on Phytosanitary Measures suggested the addition of S. *kunkelii* to the EPPO Alert List.
Where	**EPPO region**: absent. **North America**: Mexico, USA (California, Louisiana, Mississippi, Texas). **Central America**: El Salvador, Honduras, Jamaica, Nicaragua. **South America**: Argentina, Bolivia, Brazil, Colombia, Paraguay, Peru, Venezuela. The main insect vector, *D. maidis* is a subtropical species which occurs throughout the Americas in all areas where maize is grown. *D. maidis* is not known to occur in the EPPO region.
On which plants	The main host of *S. kunkelii* is maize (*Zea mays*), but the pathogen has also been detected in teosintes (e.g. *Euchlaena mexicana, Z. perennis*). The insect vector, *D. maidis* feeds on cultivated or wild species of the genus *Zea* (and occasionally on species of the closely-related genus *Tripsacum*).
Damage	Infected maize plants are stunted and show chlorotic stripes on the leaves. They have much shorter internodes with a proliferation of secondary shoots, thus giving the plants a short and bushy appearance. Infected plants often show reddish purple leaf margins. Ears are small and poorly filled. Symptoms may vary according to climatic conditions, maize cultivar and the presence of other pathogens. Pictures of the symptoms can be viewed on the Internet: http://www.ipmimages.org/browse/bimages.cfm?SUB=10498&area=72 *S. kunkelii* is reported as a major disease limiting maize production and causing economic damage in Central and South America. In recent years, its incidence has increased in many tropical and sub-tropical maize-growing areas. For example studies carried out in Argentina from 1991 to 2001, showed that the disease has largely spread across the northern part of the country, since its initial discovery in the north-east. In the Tucumán province, it was showed that *S. kunkelii* caused yield reductions varying from 50% to 90% (with an average of 70%) and that infected plants produced 3 times less grain (in weight). In the USA where the disease was formerly considered sporadic, corn stunt has been observed every year in the central valley of California since 1996, and in 2001, an outbreak there was reported to have caused economic losses of more than 5 million USD.

Transmission

In maize fields, *S. kunkelii* is transmitted by leafhoppers, mainly by *D. maidis* but *D. elimatus* has also been reported as a vector. Other species have been found capable of transmitting the pathogen in experimental conditions (*D. tripsacoides, D. gelbus, D. guevarai, D. quinquenotatus, D. tripsaci, Exitianus exitiosus, Graminella nigrifons* and *Stirellus bicolor*). Spiroplasmas overwinter within the adult leafhoppers, and when they emerge from overwintering in early spring, they can be infective. *S. kunkelii* is also pathogenic to its insect vectors, in particular it has been shown to shorten the longevity of *D. maidis*. It is important to note that *S. kunkelii* is not seed-transmitted.

Pathway

Over long distances, pathways for introducing *S. kunkelii* into the EPPO region are very limited because *S. kunkelii* is not seed-transmitted, its insect vectors are not likely to be associated with plants other than maize, maize is not vegetatively multiplied (only grown from seeds) and not normally traded as plants for planting.

Possible risks

Maize is a major crop in many European countries and *S. kunkelii* causes significant economic damage in its area of origin. Disease control is difficult in the field, and there is little information about effective methods against the insect vector or about the availability of resistant/tolerant maize varieties. Data is also lacking on the potential of establishment of the pathogen and its vector in the EPPO region, as both of them occur in tropical and subtropical regions there may be some climatic constraints in more temperate areas. No data is available on the occurrence of potential insect vectors in the EPPO region (the main vector, *D. maidis* does not occur in Europe). Finally, data is also lacking on the possible pathways for the introduction of the pathogen via infected plants or insect vectors into the EPPO region.

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EPPO RS 2008/012
Panel review date - Entry date 2008-01

2008/013 Maize redness in Serbia is associated with '*Candidatus* Phytoplasma solani' and possibly transmitted by *Reptalus panzeri*

A disease of maize (*Zea mays*) of unknown etiology and called 'maize reddening' has occurred intermittently in Serbia, Romania and Bulgaria since the 1960s. It was first observed in 1957 in Serbia (Banat region), and epidemic phases were observed in the late 1950s – early 1960s, and 40 years later in the late 1990s – early 2000s. Between these epidemic phases, the disease was always sporadically present in this part of Central Europe. Affected maize plants show a reddening of the midrib which then spreads to the stalk and eventually affects the whole plant. Symptomatic plants show abnormal cobs with poor, shrivelled grains. During epidemic phases, disease symptoms can affect up to 90% of the plants and yield reductions from 40 to 90% have been observed. In 2005, using molecular tools (PCR, RFLP, sequence comparisons), the presence of '*Candidatus* Phytoplasma solani' (stolbur phytoplasma – EPPO A2 List) was consistently detected in diseased plants. This result also constituted the first report of '*Ca*. P. solani' in maize. Further studies were carried out to identify the potential vectors of maize reddening. In the affected maize fields, high populations of *Reptalus panzeri* (Homoptera: Cixiidae) were observed in 2005 and 2006, and the phytoplasma could be detected in these insects. In cage experiments, healthy maize plants were exposed to *R. panzeri* populations collected from infested fields. Four weeks after, reddening symptoms were observed and '*Ca*. P. solani' could be detected in the symptomatic plants. These preliminary results strongly indicate that *R. panzeri* could play a role in the disease transmission. Further research will be carried out in Serbia to confirm these preliminary results and better understand the epidemiology of the disease (e.g. identify natural plant reservoirs, stages at which *R. panzeri* acquire the phytoplasma, relationship with diseases caused by '*Ca*. P. solani' on other crops such as *Capsicum annuum*).

Source: Duduk B, Bertaccini A (2006) Corn with symptoms of reddening: new host of Stolbur phytoplasma. *Plant Disease* **90**(10), 1313-1319.

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Additional key words: etiology, epidemiology, new host plant **Computer codes:** PHYP10, RS

2008/014 *Cactus virus X* found on *Hylocereus* sp. in Israel

PPIS, the NPPO of Israel, recently informed the EPPO Secretariat of the discovery of *Cactus virus X* (*Potexvirus*) infecting *Hylocereus* sp. (Cactaceae – dragon fruit, pitaya) in several places in the country. A delimiting survey is ongoing to determine its geographical distribution.
The pest status of *Cactus virus X* in Israel is officially declared as: **Present, delimiting survey ongoing.**

Note: *Cactus virus X* can infect a wide range of Cactaceae (e.g. *Cereus*, *Echinocereus, Echinopsis, Epiphyllum, Ferocactus, Opuntia, Schlumbergera, Zygocactus*), usually without any visible symptoms. This virus has been reported from different parts of the world on cultivated cacti (e.g. Europe, North and South America, Asia), however little data is available on its detailed geographical distribution and impact on affected plants.

Source: NPPO of Israel, 2008-01.

Additional key words: new record **Computer codes:** CVX000, IL

2008/015 BBA is now part of the 'Federal Research Centre for Cultivated Plants – Julius Kuehn Institute'

In Germany on the 2008-01-01, the BBA (Federal Biological Research Centre for Agriculture and Forestry) was merged with two other agricultural research bodies to form a new organization called: Federal Research Centre for Cultivated Plants – Julius Kuehn Institute (JKI). This new institute is part of the Federal Ministry of Food, Agriculture and Consumer Protection and is both a federal authority and a research institute of the federal German government.

Source: Web site of the Federal Research Centre for Cultivated Plants – Julius Kuehn Institute. http://www.jki.bund.de

2008/016 The invasive shrub *Buddleia davidii* performs better in its introduced range

It is commonly assumed that invasive plants grow more vigorously in their introduced range than in their native range. This is attributed to two major hypotheses: the Enemy Release Hypothesis (ERH) which postulates that a lack of natural enemies in the new area results in increased abundance of the invader, and the Evolution of Increased Competitive Ability Hypothesis (EICA) which states that this lack of natural enemies should select for increased competitive ability at the expense of defence mechanisms. However, few studies have tested these assumptions by comparing the performance of invasive species in their native versus introduced ranges.

Buddleia davidii (Buddleiaceae, EPPO List of Invasive Alien Plants) is a shrub native to China and was introduced to Europe and other continents for ornamental purposes around 1900. It naturalized and became invasive in Europe, North America, Africa, Australia and New Zealand. In New Zealand, the species invaded riversides and forest plantations where it out-competes native vegetation and causes significant economic problems. In both its native and invaded range, *B. davidii* prefers naturally or anthropogenically disturbed sites along roads, river banks, and railways. It also survives in walls and on rock faces and can tolerate a wide range of soil conditions. *B. davidii* populations in Europe are restricted to oceanic and sub oceanic climates in the temperate and sub Mediterranean zones (the eastern range margin currently crosses Germany). It is thought that its further spread is limited by a lack of frost tolerance. There is still poor knowledge of the species' potential to spread and to become a problematic weed on a larger scale.

The abundance, growth, reproduction as well as leaf herbivory have been compared between 10 native populations of *B. davidii* in China and 10 invasive populations in Germany.

Large variations were found among *B. davidii* populations within each range: population size varied from 12 to 15,000 individuals in the native range in China, and from 9 to 860 individuals in the invasive range in Germany. Population density ranged from 150 to 4200 ha^{-1} in China, and from 38 to 12 700 ha^{-1} in Germany. However, these differences between ranges were not statistically significant.

There was highly significant variation among populations within ranges for all measured traits. Strong evidence was found for increased plant growth and reproduction in invasive populations: mean length of stems was 79% greater, and mean diameter of thickest stem was 73% greater in invasive populations than in native ones. European plants had on average twice as many stems as Chinese plants, although this difference was marginally significant. Furthermore, inflorescences were 23% longer on average in European populations than in Chinese populations. Since the number of stems predicts the number of inflorescences, and inflorescence length predicts the number of seed capsule, the data indicate increased seed production in invasive populations. Moreover, on average seeds in Europe were 25% heavier than in Asia, but did not germinate significantly better.

Leaf herbivory was quantified visually by estimating the percentage area destroyed of 20 randomly chosen leaves from each plant. Leaf herbivory was more pronounced in *B. davidii* populations in the native range. Here, about 15% of leaf area had been lost, as opposed to plants in the invasive range that showed almost no signs of herbivory. The data suggest that low levels of herbivory may contribute to the increased size and fecundity of invasive *B. davidii* populations (according to the ERH hypothesis). Possible explanations for this decreased herbivory in invasive populations is the lack of related native plant species in Europe, and the fact that no herbivores from the native range are present in Europe. The reduced herbivory in the new range, in particular the lack of specialist herbivores, may have led to the evolution of increased plant size and fecundity in *B. davidii*, as proposed by the EICA hypothesis, but this cannot be explained by the field experiments and deserves further attention.

In addition to phenotypic plasticity, genetic differentiation might be a second mechanism underlying the increased vigour of invasive *B. davidii* populations. The ability of exotic species to undergo evolutionary adjustments to novel environments is a key feature of successful adaptations. However, genetic differentiations may also be due to artificial selection, since *B. davidii* was cultivated as an ornamental plant. Selection of desirable cultivars may lead to changes in traits related to growth and reproduction, thus enhancing the invasive potential. Hence, plant breeding has to be taken into account when assessing the evolutionary ecology of plant invaders.

Source: Ebeling SK, Hensen I, Auge H (2007) The invasive shrub *Buddleia davidii* performs better in its introduced range. *Diversity and distribution* **14**(2), 225-233. (OnlineEarly Articles: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1472-4642.2007.00422.x)

Additional key words: invasive alien plants, genetic **Computer codes:** BUDDA, CN, DE

2008/017 Invasive plants of Asian origin established in the USA

The two volumes of "Invasive plants of Asian origin established in the United States and their natural enemies" prepared by USDA provide useful information on plants of Asian origin which have been introduced into the USA and are now established. For each species, the family, habitats within the native range, broad climatic range, plant uses and natural enemies are indicated. For the EPPO region, these publications also provide useful information on plant species which are already invasive in the Euro-Mediterranean region or which may present a threat in the future. Of particular interest for climatic prediction are the distribution maps of these species in China (area of origin) and in the USA (invaded area). As the use of the species is indicated (e.g. ornamental, forage, wood, medicinal), this also suggests possible pathways of introduction into/within the EPPO region.
The EPPO Secretariat has summarized this information in the following tables:

- Species which are also indigenous within the EPPO region,
- Species which are already included in the EPPO List of Invasive Alien Plants and the EPPO Alert List
- Species which may present a risk if introduced as ornamentals from China,
- Species which may present a risk if introduced for other purposes (e.g. wood, forage) from China.

Each species has been checked against the Global Compendium of Weeds (GCW) in order to indicate its invasive behaviour elsewhere in the world, as well as in Flora Europaea, Invasive Plant Species of the World and EPPO databases to determine its occurrence and invasiveness within the EPPO region. This later information remains only indicative, and "/" indicates that no further information could be found.

Species of Asian origin which are also indigenous in the EPPO region:

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Agrostis tenuis (= A. capillaris)	Poaceae	Wetlands	Temperate	Ornamental, erosion control, fodder	W, AW, EW	Indigenous
Artemisia vulgaris	Asteraceae	Pastures, forest edges, wastelands, roadsides	Temperate, subtropical	Medicinal, forage	W, NW, AW, EW	Indigenous

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Carduus nutans	Asteraceae	Valleys, croplands, grasslands	Tropical to temperate		W, NW, AW, EW	Indigenous
Cirsium arvense	Asteraceae	Ditches, lakesides, cropfields, wastelands	Tropical, temperate	Weed	W, NW, AW, EW	Indigenous
Convolvulus arvensis	Convolvulaceae	Disturbed areas, roadsides, grassy slopes	Temperate, subtropical	Weed	W, NW, AW, EW	Indigenous
Elytrigia repens	Poaceae	Plains, oases, hillsides, roadsides, field margins	Cold temperate	Forage	W, NW, AW, EW	Indigenous
Euphorbia esula	Euphorbiaceae	Roadsides, hillsides, dunes, grasslands, wastelands	Temperate, tropical		W, NW, AW, EW	Indigenous in parts of the EPPO region
Gypsophila paniculata	Caryophyllaceae	Grasslands, rocky slopes, fixed dunes, floodplains, cropfields	Temperate	Ornamental	W, NW, AW, EW	Indigenous in AT BG CZ HU SE PL RO RU, naturalized in GR
Lepidium latifolium	Brassicaceae	Field margins and salt marshes, roadsides, slopes	Temperate	Medicinal, food	W, SW, NW, AW, EW	Indigenous
Lotus corniculatus	Fabaceae	Grasslands, cropfields, riverbanks	Medit.	Forage	W, SW, NW, AW, EW	Indigenous
Lythrum salicaria	Lythraceae	Along riverbanks, lakes, ditches, moist grasslands	Temperate, subtropical	Ornamental	W, SW, NW, AW, EW	Indigenous
Phalaris arundinacea	Poaceae	Forests and moist grasslands	Temperate	Forage, papermaking, erosion control, ornamental	W, NW, AW, EW	Indigenous
Phleum pratense	Poaceae	Broadleaf forests, forest margins, valley grasslands and prairies	Cold temperate	Forage, erosion control	W, SW, NW, AW, EW	Indigenous
Phragmites australis	Poaceae	Edge of rivers, lakes, swamps, moist areas and wetlands	Tropical, subtropical, temperate	Forage, papermaking, erosion control	W, NW, AW, EW	Indigenous
Populus alba	Salicaceae	Along rivers	Tropical, subtropical, temperate	Wood, ornamental	W, SW, NW, AW, EW	Indigenous, except in N-Eur.

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Potamogeton crispus	Potamogetona-ceae	Lakes, streams, ponds, reservoirs, paddy fields, freshwater marshes	Tropical, subtropical, temperate	Aquatic weed	W, SW, NW, AW, EW	Indigenous
Rhamnus catharticus	Rhamnaceae	Valleys, hillside thickets	Temperate	Medicinal	W, SW, NW, AW, EW	Indigenous
Rhamnus frangula (= Frangula alnus)	Rhamnaceae	Forest margins, riverbanks	Temperate	Medicinal	W, NW, AW, EW	Indigenous
Rumex acetosella	Polygonaceae	Forest margins, gravels, roadsides	Temperate	Forage	W, NW, AW, EW	Indigenous
Rumex crispus	Polygonaceae	Riversides, wetlands, roadsides	Temperate	Weed	W, NW, AW, EW	Indigenous
Stellaria media	Caryophyllaceae	Moist croplands, roadsides, grasslands near streams	Temperate	Weed	W, NW, AW, EW	Indigenous
Tamarix chinensis	Tamaricaceae	Alluvial plains, seashores, floodplains, moist and saline areas	Arid, semi-arid	Erosion control, ornamental	W, NW, EW	Indigenous in E-Eur.
Tribulus terrestris	Zygophyllaceae	Sandy areas, wastelands, hillside slopes	Tropical, subtropical	Weed of pastures, cotton, crops	W, NW, AW, EW	Indigenous
Verbascum thapsus	Scrophu-lariaceae	Grassy slopes, grasslands near river banks	Temperate	Ornamental	W, NW, AW, EW	Indigenous
Viburnum opulus	Caprifoliaceae	Valley forest	Temperate	Ornamental	W, EW	Indigenous

* Abbreviations for the Global Compendium of Weeds column:
W: weed; SW: sleeper weed; NW: noxious weed; AW: Agricultural Weed; EW: Environmental Weed.

Species of Asian origin which are already included in the EPPO List of Invasive Alien Plants or in the EPPO Alert List:

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Ailanthus altissima (EPPO List of IAP)	Simaroubaceae	Disturbed areas	Tropical, subtropical, temperate	Reforestation, ornamental, timber	W, NW, AW, EW	Invasive in almost the whole EPPO region
Buddleia davidii (EPPO List of IAP)	Buddleiaceae	Thickets, hillsides	Tropical to temperate	Ornamental, medicinal	W, SW, NW, AW, EW	Invasive in AT, CH, DE, FR, PO, GB

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Humulus scandens (EPPO Alert List)	Cannabaceae	Wastelands, forest margins, thickets along streams			W, AW	EPPO Alert List, invasive in FR, HU, IT
Pueraria montana var. *lobata* (EPPO A2 List)	Fabaceae	Dense or sparse forests, roadsides	Tropical, subtropical, temperate	Erosion control, ornamental	W, NW, AW, EW	Invasive in CH, IT
Polygonum perfoliatum (EPPO Alert List)	Polygonaceae	Along rivers, roadsides, forest margins and stream banks	Tropical, subtropical, temperate	Ornamental, medicinal	W, NW, AW, EW	Naturalized in TR
Reynoutria japonica (= Fallopia japonica) (EPPO List of IAP)	Polygonaceae	Roadsides, wetlands	Temperate	Medicinal	W, SW, NW, AW, EW	Invasive in many countries

* Abbreviations for the Global Compendium of Weeds column:
W: weed; SW: sleeper weed; NW: noxious weed; AW: Agricultural Weed; EW: Environmental Weed.

Species originating from China which may present a risk if introduced as ornamentals:

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Acer ginnala	Aceraceae	Forests	Temperate	Ornamental, medicinal	NW, EW	Planted,/
Akebia quinata	Lardizabalaceae	Forest margins, streams	Temperate	Ornamental, medicinal	W, EW	Cultivated, naturalized in FR, possibly in C-Eur.
Albizia julibrissin	Fabaceae	Hillsides, valleys, plains	Tropical, subtropical	Ornamental, landscaping	W, EW	Planted, /
Ampelopsis heterophylla var. *brevipedunculata*	Vitaceae	Forests, valleys	Tropical	Ornamental	W, NW, EW	/
Berberis thunbergii	Berbericaceae	/	Temperate	Ornamental	W, NW, AW, EW	Invasive in C-Eur.
Bischofia javanica	Euphorbiaceae	Humid valley forests	Temperate, tropical	Ornamental, wood	W, NW, EW	/
Broussonetia papyrifera	Moraceae	Roadsides, ditch banks, crop field margins, forests	Tropical, temperate	Ornamental, medicinal	W, EW	Invasive in IT
Caesalpinia decapetala	Fabaceae	Bushy hillsides, streams	Tropical, temperate	Ornamental, medicinal	W, NW, AW, EW	Planted, /
Celastrus orbiculatus	Celastraceae	Thickets on hillsides	Tropical, subtropical, temperate	Ornamental, medicinal	W, NW, EW	Occurs in the GB
Cinnamomum camphora	Lauraceae	Valleys, mountain slopes	Tropical, subtropical, temperate	Ornamental, wood, oil	W, SW, NW, AW, EW	Occurs in S-Eur.

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Colubrina asiatica	Rhamnaceae	Forested areas	Tropical, temperate	Ornamental	W, NW, AW	/
Commelina communis	Commelinaceae	Forest edges, wet areas, crop fields, orchards, ditches, roadsides	Tropical, temperate	Ornamental, weed, medicinal	W, AW, EW	Invasive in SE, LT
Cotoneaster microphyllus	Rosaceae	Rocky mountain slopes, thickets, river valleys	Temperate	Ornamental	W, EW	/
Cotoneaster pannosus	Rosaceae	Mountainous scrub land, rocky areas, wastelands	Temperate	Ornamental	W, NW, EW	Naturalized in the GB, IR
Elaeagnus angustifolia	Elaeagnaceae	Mountainous areas, plains, sands and desert	Subtropical, temperate	Ornamental	W, NW, AW, EW	Invasive in some countries
Elaeagnus pungens	Elaeagnaceae	Hilly slopes, roadsides	Subtropical, temperate	Ornamental, medicinal	W, EW	/
Elaeagnus umbellata	Elaeagnaceae	Forest edges, thickets, hillside wastelands, streambanks	Subtropical, temperate	Ornamental	W, NW, AW, EW	/
Euonymus alatus	Celastraceae	Deciduous broadleaf forests, ditches	Warm subtropical to temperate	Ornamental	W, NW, EW	/
Euonymus fortunei	Celastraceae	Hillsides, forests, forest margins, riverbanks	Warm subtropical to temperate	Ornamental	W, EW	/
Ficus altissima	Moraceae	Mountains, plains	Tropical, subtropical	Ornamental	W, NW, EW	/
Ficus microcarpa	Moraceae	/	Tropical, subtropical	Ornamental	W, SW, NW, AW, EW	/
Ligustrum sinense	Oleaceae	Mixed forest, scrublands, ravines, streams	Tropical, temperate	Ornamental	W, SW, NW, EW	/
Lonicera fragrantissima	Caprifoliaceae	Scrublands	Temperate and subtropical	Ornamental	W, SW, EW	/
Lonicera japonica	Caprifoliaceae	Riparian areas	Temperate and subtropical	Ornamental	W, SW, NW, AW, EW	Invasive in CH, ES, FR, IT, SL, etc.
Lygodium japonicum	Schizaeaceae	Roadsides, forests, forest margins, crop field margins	Tropical and subtropical	Ornamental, medicinal	W, NW, EW	/

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Lygodium microphyllum	Schizaeaceae	Streambank, roadsides	Tropical and subtropical	Ornamental, medicinal	W, NW, EW	/
Melia azedarach	Meliaceae	Open fields, roadsides, sparse forests	Tropical and subtropical	Ornamental, medicinal	W, SW, NW, AW, EW	Naturalized in ES, FR, GR, IS, SE
Miscanthus sinensis	Gramineae	Mountainous areas, highlands, wastelands	Tropical, subtropical, temperate	Ornamental, wood	W, NW, AW, EW	Planted, present in S-Eur.
Morus alba	Moraceae	Forests	Temperate, temperate	Ornamental, food	W, NW, AW, EW	Invasive in many countries: ES, FR, SE
Paederia foetida	Rubiaceae	Forests	Tropical	Ornamental, weed	W, NW, AW, EW	/
Paulownia tomentosa	Scrophulariaceae	/	Tropical, temperate	Ornamental	W, SW, NW, EW	/
Quercus acutissima	Fagaceae	Pure or mixed forests	Tropical, subtropical, temperate	Ornamental, wood	W, EW	/
Rosa multiflora	Rosaceae	Thickets, forest margins, roadsides, streams	Subtropical to cold temperate	Ornamental, medicinal	W, NW, AW, EW	Naturalized in the GB
Rubus ellipticus var. *obcordatus*	Rosaceae	Roadsides, sparse forests	Temperate	Ornamental, medicinal	W, NW, AW, EW	/
Spiraea japonica	Rosaceae	/	Temperate, subtropical	Ornamental	W, EW	Cultivated, /
Tamarix ramosissima	Tamaricaceae	Hillside slopes, stream banks, stream beds	Arid, semi-arid	Ornamental, erosion control	W, NW, EW	Invasive in IT
Taxus cuspidata	Taxaceae	Acidic soils in cold, humid habitats	Temperate	Ornamental, wood, medicinal	SW, EW	/
Wisteria sinensis	Leguminosae	Valleys, mountain forest	Tropical to temperate	Ornamental	W, EW	Planted, naturalized in FR
Wisteria floribunda (= W. multijuga)	Leguminosae	/	Tropical to temperate	Ornamental	W, EW	Planted, /

* Abbreviations for the Global Compendium of Weeds column:
W: weed; SW: sleeper weed; NW: noxious weed; AW: Agricultural Weed; EW: Environmental Weed.

Species originating from China which may present a risk if introduced for other purposes (e.g. wood, forage) or as contaminants:

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Abutilon theophrasti	Malvaceae	Along roadsides, ditches, riverbanks, disturbed areas and crop fields	Tropical and subtropical	Fibre and oil, weed	W, SW, NW, AW, EW	Invasive in many countries
Arthraxon hispidus	Poaceae	Moist areas of grasslands, hillsides, along streams	Tropical, subtropical	Forage	W, NW, AW, EW	/
Arundo donax	Poaceae	Sandy soil along riverbanks and roadsides	Tropical and subtropical	Forage, building material	W, NW, AW, EW	Naturalized in E-Eur., Invasive in S-Eur.
Carex kobomugi	Cyperaceae	Along riverbanks and sandy lakeshores	Temperate	Papermaking	NW, EW	/
Dioscorea batatas	Dioscoreacea	Forest, scrubland, forest, rivers, roadsides, disturbed areas	Tropical, temperate	Medicinal	W, EW	/
Lespedeza cuneata	Fabaceae	Roadsides, slopes, ridges, stream banks, ravines, crop field margins	Tropical to temperate	Medicinal, forage	W, SW, NW, AW, EW	/
Microstegium vimineum	Poaceae	Forest edges, moist grasslands, wetlands, margin of crop field, ditch banks, ravines	Tropical, temperate	Forage	W, NW, AW, EW	Only recorded in TR
Murdannia keisak	Commelinaceae	Wet places such as ditch sides, flooded field margins, shaded roadsides	Tropical, subtropical, temperate	Weed	W, NW, AW, EW	/
Perilla frutescens	Lamiaceae	Along roadsides, ditches, forest margins, hillsides	Tropical, temperate	Oil, medicinal	W, AW, EW	Naturalized in RU
Phellodendron amurense	Rutaceae	Forested areas, along rivers	Temperate	Wood, medicinal	W, NW, EW	Naturalized in BG, RO
Rottboellia exaltata	Poaceae	Crop fields, roadsides	Tropical, subtropical	Weed	W, NW, AW	/
Rubus niveus	Rosaceae	Hillside slopes, sparse forests, valleys, flood land, streamsides	Temperate	Food	W, NW, AW, EW	/
Rubus phoenicolasius	Rosaceae	Roadsides, valleys, forests	Temperate	Medicinal	W, NW, AW, EW	/

Species	Family	Habitat in China	Climatic area	Uses, introduction	GCW	EPPO region
Sapium sebiferum	Euphorbiaceae	Open areas, edges of crop fields, sparse forests, bodies of water	Tropical	Medicinal	W, NW, AW, EW	/
Setaria faberi	Poaceae	Hill slopes, roadsides; crop fields, orchards, wastelands	Tropical, temperate	Erosion and water control	W, NW, AW, EW	Invasive in DE, NL
Ulmus pumila	Ulmaceae	Hillside, valleys, plains, dunes	Subtropical, temperate	High quality wood, reforestation	W, NW, EW	Cultivated in S-Eur.

* Abbreviations for the Global Compendium of Weeds column:
W: weed; SW: sleeper weed; NW: noxious weed; AW: Agricultural Weed; EW: Environmental Weed.

Source:
A Global Compendium of Weeds http://www.hear.org/gcw/alpha_select_gcw.htm
Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine DH, Walters SM and Webb DA (1964/80) *Flora Europeaea*, Vol 1-5. Cambridge University Press, Cambridge (GB).
Weber, E (2003) Invasive Plant Species of the World. CABI Publishing Wallingford, (GB) pp. 548.
Zheng H, Wu Y, Ding J, Binion D, Fu W, Reardon R (2006) Invasive plants of Asian origin established in the United States and their natural enemies. Volume 1. Forest Health Technology Enterprise Team. Chinese Academy of Agricultural Sciences, United States Department of Agriculture, USDA Forest Service, 147 pp.
Zheng H, Wu Y, Ding J, Binion D, Fu W, Reardon R (2006) Invasive plants established in the United States that are found in Asia and their associated natural enemies. Volume 2. Forest Health Technology Enterprise Team. Chinese Academy of Agricultural Sciences, United States Department of Agriculture, USDA Forest Service, 175 pp.

Additional key words: invasive alien plants, pathway **Computer codes:** CN, AILAL, AKEQI, BUDDA, HUMJA, PUELO, POLCU, POLPF

2008/018 *Akebia quinata* in the EPPO region: addition to the EPPO Alert List

Considering the potential of invasiveness and the limited presence of *Akebia quinata* in the EPPO region, the Secretariat considered that this species could usefully be added to the EPPO Alert List.

Why: *Akebia quinata* (Lardizabalaceae) is a twining vine or vigorous groundcover plant native to Asia. Its common name is “chocolate vine”, or “fiveleaf” in English. The plant has been introduced for ornamental purposes and is still sold as such. Within the EPPO region, its distribution is still limited. Because this plant has shown invasive behaviour where it has been introduced elsewhere in the world and is still limited in the EPPO region, it can be considered an emerging invader in Europe.

Geographical distribution
EPPO region: France (Aquitaine), United Kingdom (South-East England, invasive).

Asia (native): China (Anhui, Fujian, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Sichuan, Zhejiang), Japan (Honshu, Kyushu), Republic of Korea.

North America (invasive): USA (Connecticut, Delaware, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Massachusetts, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Virginia, West Virginia).

Morphology
This deciduous or half evergreen shrub can grow up to 12 m or more, and has slender, rounded stems that are green when young and brown at maturity. The palmate leaves are divided into 5 (or fewer) equal parts and are alternate. Leaflets are 3-6 cm long, glaucous on the lower side. Female flowers are purplish brown, 25-30 mm in diameter; male flowers are rosy purple, much smaller, and appear on short stalks of 5 mm length. Flowers have the scent of vanilla, especially at night. The fruit is a purplish-violet, flattened pod of 6-8 cm length containing numerous tiny, black seeds.

Biology and ecology
A. quinata is deciduous in cooler climates, but may remain evergreen in warmer regions. It grows extremely quickly (6-12 m per year). The vine spreads mainly vegetatively. This plant does not always produce fruits; seeds are known to be carried by birds, but are not carried by wind or insects. *A. quinata* is largely spread by human activities. It tolerates shade and drought and is hardy to about -20°C, however young growth in spring is frost-tender even on mature plants. It can grow in light (sandy), medium (loamy), and heavy (clay) soils but requires a well-drained yet moist soil. It can succeed in either acid or alkaline conditions.

Habitats
A. quinata thrives in many habitats, particularly in riparian zones, wetlands and urban areas.

Impacts
A. quinata forms dense curtains of interwined stems that cover, out compete and kill existing ground level herbs and seedlings, understorey shrubs and young trees, and overtop canopy trees. Once established, the plant prevents germination and establishment of native species.

Control
Mechanical control of small infestations is achieved by cutting plants several times a year due to their rapid growth. At least, plants should be cut back to the ground at the end of the summer. Vines may be pulled out, removing as many roots as possible. Large infestations can be treated with systemic herbicides such as glyphosate or tryclopyr.

Source: Global Invasive Species Database
http://www.issg.org/database/species/ecology.asp?si=188&fr=1&sts=

Weber, E (2003) Invasive Plant Species of the World. CABI Publishing Wallingford, (GB) pp. 548, p. 34.

Additional key words: Invasive alien plants, Alert List **Computer codes:** AKEQI, GB

2008/019 A Spanish law on Invasive Alien Species

On 2007-12-14, a Spanish Law on Natural Heritage and Biodiversity was approved. This law addresses the following topics:

Prevention and control of invasive alien species (Article 61):

- It creates the Spanish catalogue of invasive alien species that functions on a regulatory basis and depends upon the Ministry of Environment. This catalogue will list invasive alien species and subspecies that represent a threat for autochthonous species or habitats, agriculture or economy on the basis of technical or scientific information.
- Any addition to this catalogue will be done by the Ministry of Environment, upon the advice of the National Commission for Natural Heritage and Biodiversity, and after proposal of local bodies or the Ministry itself, when technical or scientific information is available. Any citizen or organization can solicit inclusion or exclusion of species or subspecies from the catalogue, on the basis of a scientific debate.
- Any addition to the Spanish catalogue of Invasive Alien Species incurs the prohibition of possession, transport and trade of dead or alive specimens or their propagules. This prohibition is subject to exceptions for reasons of research, health or security.
- On a local scale, monitoring of alien species showing an invasive behaviour in other countries or areas will be conducted with the aim of proposing their inclusion in the Spanish catalogue of invasive alien species.
- The Ministry of Environment and the local bodies will develop strategies for the management and possible eradication of the species listed.
- The local bodies could establish catalogues of invasive alien species for their respective territories.

Infractions and sanctions:
Introduction of species listed in the Spanish catalogue of invasive alien species without an administrative authorisation is considered an administrative infraction.

Source: Ministero de la Presidencia, Boletín Oficial del Estado 2007-12-14.
http://www.boe.es/boe/dias/2007/12/14/pdfs/A51275-51327.pdf

Additional key words: invasive alien plants, legislation **Computer codes:** ES

2008/020 Second Symposium "Intractable Weeds and Plant Invaders", 2008-09-14/18, Osijek, Croatia

The European Weed Research Society will organize the symposium "Intractable Weeds and Plant Invaders", on 2008-09-14/18 in Osijek, Croatia. The primary objectives of this symposium are to provide a forum for the presentation and discussion of recent and ongoing research in the fields of invasive plants and weed science.
The following sessions are planned:

- Biology and ecology of *Ambrosia artemisiifolia*
- How to control *Ambrosia artemisiifolia*?
- New techniques and information technology,
- Invasive plants, Biological control of weeds,
- Weed management in arid and semi-arid climates,
- Invasive aquatic plants (to be confirmed).

Source: Second Symposium 'Intractable Weeds and Plant Invaders'. http://www.tera.hr/~kmirok/EWRS/index.htm

Additional key words: Invasive alien plants, conference **Computer codes:** HR

2008/021 5th International Weed Science Congress, 2008-06-23/27, Vancouver (CA)

The theme of the 5th International Weed Science Congress is "Weeds – local problems/global challenge", and will be held on 2008-06-23/27 in Vancouver (CA). It will contribute to the core goals of weed research and weed management for better livelihoods and for conserving global biological diversity.
The main topics will be:

- Biology, dynamics and ecology of weeds,
- Integrated weed management,
- Modelling problems and solutions,
- Formulation and adjuvants,
- Regulatory, economic and social aspects,
- Herbicide resistance in crops and weeds,
- Biocontrol,
- Spread and management of invasive species,
- Aquatic weed management,
- Education and technology transfer in weed science,
- Environmental aspects of weed management,
- Spotlights on global weeds.

Source: International Weed Science Society. http://iws.ucdavis.edu/5intlweedcong.htm

Additional key words: Invasive alien plants, conference **Computer codes:** CA